

# Manual

# QDSP2

iSTAT Configuration and Analysis Software

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# CONTENT

1.	INTRODUCTION	3
1.1	General	3
1.2	Products	3
1.3	Features	3
1.4	Communications	4
1.5	QDSP2 Software Functions	4
1.5.1	Devices Management	4
1.5.2	Instrument settings	4
1.5.3	Real time measurements	4
1.5.4	Data Analysis	4
1.5.5	Software upgrading	4
2.	INSTALLING QDSP2	5
2.1	Obtaining the software	5
2.2	Compatibility with 'Windows' versions	5
2.3	Installing the software	5
3.	COMMUNICATIONS SETUP	7
3.1	Serial Communications	7
3.1.1	RS232	7
3.1.2	RS485	8
3.1.3	Communications port setup	8
3.1.4	Serial Port Setup	9
3.2	USB	9
3.2.1	Installing the USB driver	10
3.2.2	USB Port setup	11
3.3	Ethernet	12
3.3.1	Using Fixed IP address	12
3.4	IR – Infra-Red	14
4.	DEVICES MANAGEMENT	15
4.1	Favourite devices	15
4.2	Scan the Network	16
4.3	Browse Ethernet devices	17
5.	SETTINGS	18
5.1	Introduction	18
5.1.1	Working On-line	18
5.1.2	Working Off-line	19
5.2	QDSP2 Interface	20
5.3	Product details	22
5.4	General Settings	22

## Page 1

User Manual

QDSP2		Page 2
5.4.1	Connection	22
5.4.2	Communication	22
5.4.3	Display	22
5.4.4	Security	22
5.5	Energy	22
5.6	Inputs and Outputs	22
5.7	Alarms	23
5.8	Memory	23
5.9	Power Supply Quality	24
5.10	Reset Operations	24
6.	MEASUREMENTS	25
6.1	Online measurement display	25
6.2	Online measurements recorder	27
7.	DATA ANALYSIS	29
7.1	Read Instrument Data	29
7.2	Open data File	33
7.3	Import SD/MMC data	33
8.	UPGRADES	34
8.1	Device Upgrade	35
9.	OTHER FEATURES	36
9.1	Change QDSP2 language	36
9.2	Memory card operation	36
9.3	Interactive Instrument	36

#### 1. INTRODUCTION

#### 1.1 General

This manual describes the **QDSP2** setting and analysis software. It does not describe the original QDSP software which it replaces. The original QDSP 1.0 software is detailed in manual QDSP\_EN\_M\_C.

The **QDSP2** software can be used to program all communicating products in the iSTAT Transducer, Measurement Centre and Power Quality product families.

It is simple to set-up and use, allowing fast configuration of the measurement devices.

This manual describes how to install the software, configure communications channels on the PC and describes the features of the software. For details of how to program a specific product refer to the technical manual for the product.

The **QDSP2** software includes detailed help files, therefore this manual is only intended to get the user started with the software and familiarise them with the main features.

#### 1.2 Products

**QDSP2** is used for device configuration, browsing online measurements, Trend recorder and Power Quality configuration, record download and analysis.

The **QDSP2** software is available to download free of charge.

The **QDSP2** software runs under Microsoft Windows on a PC.

Minimum system Requirements

- Windows XP / Vista / 7
- 1 GHz Processor
- 512 MB RAM
- Available disk space 1GB (32-bit) or 2GB (64-bit)
- Monitor with VGA resolution
- RS232, USB or Ethernet communication port

#### 1.3 Features

The following features are included:

- Standard type Microsoft interface, which is easy to read and navigate.
- The same programming interface for all product families, only the quantity of programming options changes depending on the features available in the product.
- Sample configuration files for each product which allows the setting options to be investigated offline without a product connected to the PC.
- Saving of a modified configuration file for later editing or download to the product.
- Upload of the entire product configuration and the relevant setting data (Modbus Holding Registers) from individual devices and presentation of the data.
- Changing the values of settings in the product using Modbus protocol.
- A communication browse function is included so that the communication parameters of all iSTAT products connected to the PC can be identified.
- Real time monitoring of the attached product allows periodic reading and displaying of the measurement data.
- Comprehensive Help files are available within the software.

#### 1.4 Communications

The iSTAT products can be fitted with a range of communications options, RS232, RS485, Ethernet and USB. Some products can also communicate using a memory card or Infra-red link. The **QDSP2** software can support communication via all of these options depending on what the PC has fitted.

#### 1.5 QDSP2 Software Functions

The **QDSP2** has 5 main functions which are described in detail in later sections.

#### 1.5.1 Devices Management

The communications parameters for any connected device can be modified. Also included are browsers which scan the communications networks attached to the PC and identify all of the devices connected with their addresses and communications parameters. This can be done on RS232, RS485, USB and Ethernet connections.

#### 1.5.2 Instrument settings

The instrument settings are organized in a tree structure and they can be modified simply as required. In addition to transferring settings to the instrument, **QDSP2** can also store the data to settings files and read it back when required.

#### 1.5.3 Real time measurements

All measurements can be displayed in real time in tabular or graphical form. Harmonics and their time-reconstruct signals are displayed graphically.

If further processing of the measurement data is required it can be copied via a clipboard and inserted into standard Windows formats.

#### 1.5.4 Data Analysis

Analysis can be performed on the recorded data from those products with Trend recorders or Power Quality function. Recorded values can be displayed in a tabular or graphical form. The events that triggered alarms can be analysed or a report on supply voltage quality can be made. All data can be exported to an Access database, Excel worksheet or a text file.

#### 1.5.5 Software upgrading

It is suggested that the latest version of **QDSP2** should always be used and if the system is also connected to the internet it will define if an upgrade is available for download.

#### 2. INSTALLING QDSP2

#### 2.1 Obtaining the software

The **QDSP2** software is available free-of-charge. Unlike the original QDSP 1.0 there is only one version of **QDSP2** and all features are available without requiring a license code.

The software can be downloaded from the Internet at:

http://www.alstom.com/grid/products-and-services/Substation-automationsystem/measurement-merging-gps/QDSP-setting-monitoring-and-analysis-software/

Or can be downloaded as an upgrade from within **QDSP2** when connected to the Internet. It can be copied from a CD or other storage media and it is small enough to be emailed.

**QDSP2** is supplied as a zipped file, which after being downloaded must be unzipped into a temporary directory. The executable file will have a name similar to 'QDSP 2.1.0.01.exe'. All of the following instructions will be the same however the software is obtained.

#### 2.2 Compatibility with 'Windows' versions

The QDSP2 software has been designed to work with 'Windows XP' and 'Windows 7'.

The instructions in this manual which rely on the operating system are written using Windows XP; similar actions will be required if using Windows 7.

#### 2.3 Installing the software

Before installing a new version of **QDSP2** any existing version of **QDSP2** (described as QDSP Setting studio 2.x) must be un-installed from the computer. It is not necessary to remove the original version of QDSP 1.0 which is installed in a different directory (by default) and which can coexist with **QDSP2**.

**QDSP2** is available in multiple languages, but the installation process is the same. The required language is selected from within the program after installation, see section 9.1.

To install the software double-click on the 'QDSP'....exe' file name, and the software will decompress itself and start the installation process by displaying the following screen.



#### User Manual

#### QDSP2

#### Page 6

Continue with the installation following the on screen instructions until the 'following screen is displayed. Click Finish to complete.

🙀 QSDP Setting Studio 2.1 - Ir	nstallShield Wizard
2	InstallShield Wizard Completed
	The InstallShield Wizard has successfully installed QSDP Setting Studio 2.1. Click Finish to exit the wizard.
	Launch the program
	< Back <b>Einish</b> Cancel

The installation program loads a shortcut for the **QDSP2** program on to the Desktop of the PC which can be used to launch the program when required.

#### 3. COMMUNICATIONS SETUP

The **QDSP2** software can communicate with the iSTAT products via IR, RS232, RS485, USB and Ethernet. The option used will depend on which communication port is fitted to the product.

The QDSP2 software always uses Modbus protocol to communicate with the product.

#### 3.1 Serial Communications

RS232 and RS485 communications are grouped in the **QDSP2** software as Serial Communications. The **QDSP2** interface is the same, but the hardware interface on the PC could be different.

#### 3.1.1 RS232

The PC that is running **QDSP2** can either be fitted with a dedicated RS232 port or it may have to use a USB to RS232 converter.

If a USB to RS232 converter is being used then it needs to be installed as defined in its instructions using the installation files supplied with the converter. The converter will be installed on a 'COM' port on the PC and the COM port number needs to be known to set up the link within **QDSP2**. It is important that the converter is always plugged into the same USB port that it has been installed in or it may not work.

If the COM port number on the PC is not known this can be identified, but if a USB to RS232 converter is to be used it must be plugged in. To find the COM port being used right click with the mouse on the 'My Computer' ICON on the Desktop and select <Manage> to get the 'Computer Management' screen. Select <Device Manager> and 'Ports (COM & LPT)



A RS232 port will show as 'Communications Port' and the USB to RS232 converter will be identified along with its installation COM port.

Portable PC's usually cannot be fitted with RS485 ports; therefore an interface converter is required. This can be either an external RS232 to RS485 converter of a plug in USB to RS485 converter. It is suggested that a USB to RS485 converter is used as this can power itself from the USB port.

If an external RS232 to RS485 converter is used, there will be no installation required and the operation will be the same as for a RS232 port.

If a USB to RS485 converter is used, it is installed in the same way as for the USB to RS232 converter and the COM port number is obtained in the same way.

3.1.3 Communications port setup

When the **QDSP2** software is loaded the 'Devices' page is displayed, this can also be selected by clicking on the 'Devices' icon.



The Communications port setup is accessed by selecting 'Change settings' from the 'Devices' page and the following window is opened.

#### QDSP2

Communication port	×
Serial Ethernet USB	IR
Commission	
Bits per second:	
Parity:	None
Data bits:	8
Stop bits:	2
	OK Cancel

#### 3.1.4 Serial Port Setup

The Serial Port setup is accessed by selecting 'Change settings' from the 'Devices' page and then selecting 'Serial' as shown above.

# Note: If a USB to RS232 or RS485 converter is used the communication port settings for Serial must be configured; QDSP2 is communicating serially. The USB configuration must not be used; this should only be used for a direct USB connection when the product is fitted with a USB port

The COM port number being used should be defined along with the communications port settings for the iSTAT product connected. It is necessary that the communications settings of the PC match those of the product attached, if they are not known then they can be found using 'Scan the Network' (section 9.2).

Note: QDSP2 can only operate with COM1 – COM32, if the computer assigns a COM number outside this range to the communications link then it will have to be reassigned to a COM number in the range via Device Manager.

#### 3.2 USB

For those products that are supplied with a USB interface, direct communications via USB can be used. Before communications can be started the iSTAT product needs to be installed on the PC as a USB device. This installation is done for a specific USB port and the product must be connected to this port each time it is connected. If it is required that the product should communicate via any available USB port it needs to be installed on all of them.

The products in the iSTAT range use more than one type of USB connector, for details of the connector type, and therefore USB cable type, see the product or its documentation.

#### 3.2.1 Installing the USB driver

The **QDSP2** software must be installed on the PC as the USB driver required is included. The following installation is described for Windows XP; the equivalent installation process should be followed for other operating systems.

Plug in the product to the required USB port and the PC should report that it has found a new USB device which is defined as 'Measuring Device'. The 'Found New Hardware' wizard will appear and 'No, not this time' should be selected.

<ul> <li>Welcome to the Found New Hardware Wizard</li> <li>Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy</li> <li>Can Windows connect to Windows Update to search for software?</li> <li>Yes, this time only</li> <li>Yes, now and every time I connect a device</li> <li>No, not this time</li> <li>Click Next to continue.</li> </ul>

Then the following screen is shown and the 'Install the software automatically' option should be selected.

Found New Hardware Wizard Found New Hardware Wizard		
	This wizard helps you install software for: Measuring Device If your hardware came with an installation CD or floppy disk, insert it now.	
	What do you want the wizard to do?      Install the software automatically (Recommended)      Install from a list or specific location (Advanced)  Click Next to continue.	
	< Back Next > Cancel	

The software will now be installed which could take some time and then the completion screen will be displayed.



#### 3.2.2 USB Port setup

The USB Port setup is accessed by selecting 'Change settings' from the 'Devices' page and then selecting 'USB' as shown below.

Serial Ethernet USB IR	
Communication port:	
	DSP
Find USB COM9:	USB Measuring Device

When 'Find USB' is selected the software will report which USB COM port is connected to an iSTAT product, as shown above. The balloon message will only remain for a few seconds. The USB COM port reported as connected to the iSTAT product will be loaded as 'Communication port', press 'OK' to continue.

Note: QDSP2 can only operate with COM1 - COM32, if the computer assigns a COM number outside this range to the communications link then it will have to be reassigned to a COM number in the range via Device Manager.

#### QDSP2

## 3.3 Ethernet

When using the **QDSP2** over Ethernet the set-up will depend on how the PC and the product are connected. The Communication interface must have a unique IP address in the Ethernet network. Two modes for assigning IP are available:

*Fixed IP address:* In most installations a fixed IP address is required. A system provider usually defines IP addresses. An IP address should be within a valid IP range, unique for your network and in the same Subnet mask as your PC.

**DHCP:** Automatic method of assigning IP addressed (DHCP) is used in most networks. If you are not sure if DHPC is used in your network, check it with your system provider.

#### 3.3.1 Using Fixed IP address

When the PC is directly connected to the Instrument a Fixed IP address will have to be used with the PC configured in the local area connection. If the connection is made without a Hub or Switch, the connection has to be made with a Crossover Ethernet cable.

To set the PC for local area connection, go to <Settings><Network Connections> then highlight the Local Area Connection, select 'Internet Protocol (TCP/IP)', right click and select 'Properties'. Select 'Use the following IP address' and define an IP address, it is suggested that it is set to 192.168.0.1., the Subnet mask will be set automatically. Click 'OK' to close the windows and setup the PC.

File Edit View Favorites Tool	ls Advanced Help			A	
🕝 Back 🔹 🕥 👻 🏂 🗙	🍤 🔏 🛅 📔 🔎 Search 🦻	Folders 💣 ず 🔽	•		
Address 🔊 Network Connections			•	🔁 Go	
	Name	Туре	Status	Device Na	
Network Tasks	LAN or High-Speed Internet				
🛐 Create a new	1394 Connection	LAN or High-Speed Inter	Connected, Firewalled	1394 Net .	
connection	Local Area Connection 3	LAN or High-Speed Inter	Disabled, Firewalled	Cisco Syst	
Firewall settings	(()) Wireless Network Connection	LAN or High-Speed Inter	Not connected, Firewalled	Intel(R) PF	
Disable this network device	Local Area Connection	LAN or High-Speed Inter	Connected, Firewalled	Broadcom	
🔌 Repair this connection	Local Area Connection Propertie	s ?×	Internet Protocol (TCP/I	P) Properties	? ×
Rename this connection	General Authentication Advanced		General		
View status of this connection	Connect using:		You can get IP settings a	eeioned automatically if your natwork	eunnorte
Change settings of this connection	Broadcom NetXtreme 57xx Giga	abit C Configure	this capability. Otherwise, the appropriate IP setting	you need to ask your network admini s.	istrator for
	This connection uses the following iten	ns:	C Obtain an IP addres	is automatically	
Other Places	QoS Packet Scheduler		Use the following IF	address:	
🚱 Control Panel	Pass Protocol (IEEE 802.1x)	v3.5.3.0	IP address:	192.168.0.	1
Section 2015 My Network Places	Internet Protocol (ICP/IP)		Subpet mark	255 255 255	0
My Documents	4		Subhot music.	233.233.233.	
My Computer	Install Uninstall	Properties	Default gateway:		_
	Description		C Obtain DNS server	address automatically	
Details	Transmission Control Protocol/Inter	net Protocol. The default	- C Use the following D	NS server addresses:	
Local Area Connection	wide area network protocol that pro- across diverse interconnected netw	vides communication orks.	Preferred DNS server		_
LAN or High-Speed Internet					_
Connected, Firewalled	Show icon in notification area when	n connected	Alternate DNS server:	1 10 10 G	
5 1 50 100 55	✓ Notify me when this connection has	is limited or no connectivity			
				Ad	dvanced
		OK L Creat			
		un Lancel		OK	Cancel

With the PC set to Local Area Connection and the device connected it is necessary to set an IP address in the device. Using the 'Browse Ethernet Devices' function (section 9.4) the product will not be found unless it has been previously assigned an IP address in the required range.

On most iSTAT products fitted with an Ethernet port a USB port is also provided. The USB port should be used to set up the Ethernet communications parameters. Also the IP address can be set manually on products with a keypad and display.

Where it is not possible to set up the Ethernet via a USB connection or using a keypad, the required IP address can be set by selecting 'Assign IP' and enter the unique MAC address of the product, this will be found on the connection label on the side of the product. Then select 'IP address' and input an IP address in the same range as the PC, e.g. 192.168.0.10. After clicking 'OK' the product must be powered down and then restarted to complete the change of the IP address

#### QDSP2

Refresh	Address: 33	🚖 Go to: 👻	
	Schooted douise	0	Saunhing
Settings	Address: Type: Serial number: Software version:	Port 192.168.0.111 Setting: 10001	Scan the network
Measurements	Device Ser. No. Description	Location Commun	ication parameters
Analysis	Assign IP b		
Upgrades	MAC: IP Addres IP Port:	00-18-DF-00-02-2A 192 168.0.100	
		OK Cancel	Download changes

Once the IP address has been set-up in the required range, 'Browse Ethernet devices' can be used to find the product.

🔁 Refresh	Address: 1 5MT	🙀 Go to: 👻 Device #1, IP Address: 192.16	68.0.25, Port: 10001, Modbus TCP
	Devices		
Devices	Selected device	Communication port	Searching
Settings	Address: 1 Type: I5MT Seriel number: MT000105	Port 192.168.0.25 Setting: 10001	Scan the network
(interpretation in the second			
Analysis Upgrades	Device Ser. No. Description	Location Communic	Communication           125,10001           IP Address           19 Address           19 Pott           10001           DHCP           False           MAC           00.18.0F.00.02.2A           Modbus Address 1           Ceneral           Type           ISAR. No.           M1000105           Soft. Ver.

By double clicking on the device identification for the product of interest the product identification and communication settings will be shown on the right hand side. The communication settings should also have been loaded in to **QDSP2** ready to set up direct communication with the device.

#### 3.4 IR – Infra-Red

The Infra-Red (IR) communications device can be used with the M241 Measurement Centre with logger and requires the IR interface to be ordered separately.

The IR interface is connected to a RS232 port; see section 8.1.1 to find how the COM port number is identified.

The IR Port setup is accessed by clicking <Devices><Communication port setting><Change Settings> or <Tools><Communication port setting>> and selecting the required COM port.

Communication port	×	
Serial Ethernet USB IR	1	
Communication port:	COM5 ▼ COM1 ▲ COM2 COM3 COM4 COM5 COM6 COM7 COM8	
	OK Cancel	

No other communications settings need to be defined.

Note: QDSP2 can only operate with COM1 – COM32, if the computer assigns a COM number outside this range to the communications link then it will have to be reassigned to a COM number in the range via Device Manager.

Page 15

## 4. DEVICES MANAGEMENT

When the 'Devices' icon is clicked the following screen is seen.



The Selected device is shown that is currently being communicated with. Details of devices in the Favourites devices list are shown in the drop down menu to the right of the 'Go to' button. They are obtained by clicking on the down arrow symbol at the right of the selected device details. From the list quick changes can be made between devices.

In addition are options to change the Communication port settings and to Search for connected devices by either Scanning or Browsing.

#### 4.1 Favourite devices

It is possible to record the communication settings for any of the instruments that are commonly connected to. These are shown in the drop down list above.

All connections where the communications have been successful are stored in the list, but those that are no longer required can be removed. To make the settings meaningful, they can be edited to give a Connection name that relates to the application, see below.

To edit a 'Favourite' select the required entry so that it is in the window, highlighted as shown below. Then click the down arrow to the right of 'Go to' to get the options to rename or delete the entry.

When the required renaming or deletion is complete click anywhere on the screen or use the 'Esc' key to return to the main screen.

The renamed 'Favourites' will appear in the 'Go to:' list to allow different devices to be selected quickly by name.

#### **User Manual**

🔁 Refresh

SI Devices

Setting

6

Analysis

Upgrades

#### QDSP2

#### 🖏 QDSP 2.1 - Setting Studio \_ 🗆 🗙 File Tools View Help 📫 🔒 📴 • 💼 🖬 🕼 🍙 🕼 🔌 🔲 🗇 🍕 🚖 Go to: 👻 Bus 1 #33, COM5 - USB, S Address: 33 🚯 Communication error . 🙉 Rename 💷 Devices ► Delete • Communication port Selected device Searching Address: Port: COM5 - USB 🔍 Scan the network Туре: Setting: 115200,None,8,2 Serial number Software version: C Browse ethernet devices 🗞 Change settings

#### 4.2 Scan the Network

When QDSP2 is first connected to an instrument or a network of instruments the communications settings and device addresses will probably not be known. By using 'Scan the network' from 'Devices' the information for all connected devices can be obtained.

For 'Scan the Network' to operate the communications port type, Serial or USB (not Ethernet) and COM port number must be selected using 'Change settings' before attempting the scan. The Scan will find the device addresses and detailed port settings.

	<b></b>	30 M	
🔝 Refresh	Address: 33	Go to: 👻	
<b>B</b>	👷 Devices		
Devices	Selected device	Communication port	Searching
	Address: Type:	Port: COM6 - USB	Scan the network
Settings	Serial number:	3etting: 115200,140ne,6,2	
Socarigs	Software version:	Change settings	Browse ethernet devices
Ø			
Measurements			
Analysis	M 355 MC014924	#33,115200,	None,8,1
Upgrades			
			Searching COMC: 115200, Name

For serially connected devices the scanner will interrogate all combinations of communications setting to identify what devices are connected. If nothing is found on the first attempt check to ensure that the correct COM port number is defined and then click on the 'Scan the network' icon as shown.

# Note: If a USB to RS232 or RS485 converter is being used then the communication type must be selected as 'Serial'. 'USB' should only be selected when a direct USB connection is being used to a USB port on the product connected.

For a product connected directly using USB the scan is done in a similar way as for serially connected devices with 'Port' set to the COM port number of the USB connected instrument.

By double clicking on the device identification for the product of interest the product identification and communication settings will be shown on the right hand side. The communication settings should also have been loaded in to **QDSP2** ready to set up direct communication with the device.

#### 4.3 Browse Ethernet devices

When working with Ethernet connected devices 'Browse Ethernet devices' can be used to find all those devices connected which have a valid IP address. If a device is not found then its IP address may be outside the valid range.



By double clicking on the device identification for the product of interest the product identification and communication settings will be shown on the right hand side. The communication settings should also have been loaded in to **QDSP2** ready to set up direct communication with the device.

#### 5. SETTINGS

#### 5.1 Introduction

In order to modify the settings with **QDSP2** the current parameters must be loaded first. Instrument settings can be acquired via a communications link or they can be loaded off-line from a file on a local disk.

The **QDSP2** contains sample settings files for each product variant that can be downloaded to show the range of settings available for the specific product. Being able to modify the sample setting file is a very powerful tool as it allows configuration options to be checked without a product being purchased. Any combination of settings and their values that the software allows should be reproducible in a product ordered with the same hardware configuration.

These files can be modified and then stored under a different name allowing an instrument configuration to be generated off-line without an instrument attached, and downloaded at a later date.

The list of settings can be printed if required.

5.1.1 Working On-line

When the communication links with the products have been established the settings for any of the products can be downloaded by changing the address and pressing 'Read device settings'.

The complete hardware configuration of the device is uploaded along with the current settings for all parameters. The hardware configuration of the product is fixed and if changed in **QDSP2** it can not be downloaded to the product (see Working Off-line).

The parameters can be changed on the screen and when required these are downloaded to the product by pressing the 'Download settings'.

The settings can be saved to a file using 'Save settings'.

	Download Save settings settings
	Retting Studio
	Eile Iools View Help
Read device —	- E 🔁 🔁 - E 🖬 🖾 🖂 🔍 💷 🗞 🎯
settings	Refresh Address: 33 🚍 M355
	Gi Settings

#### 5.1.2 Working Off-line

To work Off-line no product needs to be attached to the PC; instead a stored configuration file can be used.

To load a standard sample configuration, select 'Settings' in the left hand ICONS, then 'Open setting file' to get the list of product files from which the required file can be selected.

₹ QDSP 2.1 - Settin File Tools Vier ■ 🕞 😁 + 📾 중 Refresh	g Studio Help Carl Carl Carl Carl Carl Carl Carl Carl	🚖 Go to: 🕶			
Devkes Settings Measurements	What do you want to do?	Open Look in: Param My Bacart Documents Deatrop Deatrop Deatrop	H4MT.msf MM203.msf H4MV.msf MM212.msf H4P.msf MM213.msf H4P.msf MM24.msf H4V.msf MM231.msf H4VV.msf MM231.msf H4VF.msf MM231.msf H4VF.msf MM232.msf	ĨX ♪ ♪ □•	
Analysis Upgrades		My Documents My Conguler My Conguler My Conguler My Conguler My Network Piaces File name: Files of type:	ISMU.nef         IM23.nef           ISMQ.nef         IM241.nef           ISMQ.nef         IM241.nef           ISMS.nef         IM243.nef           ISMS.nef         IM243.nef           ISMT.nef         IM243.nef           ISMT.nef         IM244.nef           ISMT.nef         IM253.nef           ISMT.nef         IM253.nef           ISMT.nef         IM35.nef           ISMT.nef         IM35.nef           Status         IM35.nef           Setting files (*.net)         Image: 1.5 mage	v Open v Cancel	
					d.

If a configuration file specific to an application has been stored previously it can be accessed in the same way, but the directory to be looked into may have to be changed.

To change the settings file that is being looked at Off-line without shutting **QDSP2** down then go to <File ><Open>.

The configuration file will define a set of communications and I/O modules fitted to the device. If the hardware I/O modules shown do not meet the requirements and it is necessary to look at their configuration then they can be changed. To be able to modify the hardware configuration defined in the file it is necessary that the configuration file has a file name different to that of the default file for the product.

The hardware configuration for the device is shown on the settings page obtained when the product identification, i.e. M355, is highlighted. To change the hardware setting for the communications or I/O modules select the required option from the drop down menus, as shown below.

With Settings       Convection         Settings       Convection         Settings       Convection         Settings       Convection         Settings       Setting         Value       Type         Settings       Setting         Settings       Settings         Settings	🔁 Refresh	Address: 33	🖕 Go to: 👻		•
Mass		Gi Settings		C:\Program Files\QDSP 2.1\I	aram\/M355.msf
Devices		🖃 🧮 M355	L Setting	Value	<b>_</b>
With the section     Settid Number       Settings     Diplay       Settings     Diplay       Benergy     Converted in       Converted in     Diplay       Benergy     Converted in       Converted in     Calibration Vallage M/I       Converted 3     Calibration Vallage M/I       Converted 4     Calibration Vallage M/I       Converted 3     Calibration Vallage M/I       Converted 4     Calibration Current Alub Range       Power Stapply     Calibration Aluber Range       Diplay type     Language pack       Standard Ingruspe pack     Stan	Devices	🖨 🚓 General	Туре	M355 PQ Analyser	
Image: Setting:     Image: Communication     Setting:     Setting:     Setting:       Image: Setting:     Image: Setting:     Setting:     Setting:     Setting:       Image: Setting:     Image: Setting:     Setting:     Setting:       Image: Setting:     Image: Setting:     Setting:       Image: Setting	001100		Serial Number		
Image: Security       Image: Security         Security       Image: Security         Image: Security       Image: Security         <		Communication	Software version		
Setting: <ul> <li>Setting:</li> <li>Counter 1</li> <li>Counter 1</li> <li>Counter 1</li> <li>Counter 2</li> <li>Collisation Voltage Auto Range</li> <li>Yein</li> </ul> <ul> <li>Counter 3</li> <li>Counter 4</li> <li>Collisation Current (A)</li> <li>Collisation Current</li></ul>			Hardware version		
Setting: <ul> <li>Counter 1</li> <li>Counter 2</li> <li>Counter 3</li> <li>Counter 4</li> <li>Counter 5</li> <li>Counter 4</li> <li>Counter</li></ul>	100	Security	Accuracy class	0.1	
Wessurements     Counter 2     Calibration Voltage Auto Range     Yes       Counter 3     Counter 4     Calibration Current (A)     5       Counter 4     Calibration Current (A)     5       Massurements     Tail Cook     Power Supply     2207.50/201+z       Mains     Tail Cook     Power Supply     2207.50/201+z       Counter 4     Calibration Current Auto Range     Yes       Mains     Tail Cook     Power Supply     2207.50/201+z       Communication     Ethernet AUS8     Power Supply     2207.50/201+z       Communication     Ethernet AUS8     Dialphy type     LCD 128:64 Yellow Grain       I (B) Relay output     Toput 7.0 Uput 2     Power Supply     Standard Ingruinge pack       I (B) Relay output     Toput 7.0 Uput 2     Polies output 200       I (B) Relay output     Toput 7.0 Uput 3     Polies output 200       I (B) Relay output     Toput 7.0 Uput 4     Analogue riput 200       I (B) Relay output     Toput 7.0 Uput 4     Analogue riput 200       I (D) Spectromisation, CDM2     Input 7.0 Uput 4     Analogue riput 200       I (D) Counter 3     Calibration date     Calibration there       I (D) Counter 4     Calibration date     Calibration there       I (D) Counter 5     Calibration Curent 6     Calibration there	Settings	Energy Counter 1	Calibration Voltage (V)	500	
Wessurements     Counter 3     Calibration Currer (A)     5       Counter 4     Counter 4     Calibration Currer (A)     5       Counter 5     Calibration Currer (A)     5       Counter 4     Counter 4     Calibration Currer (A)       Counter 5     Calibration Currer (A)     Calibration Currer (A)       Counter 5     Calibration Currer (A)     Calibration Currer (A)       Counter 4     Counter 6     Calibration Currer (A)       Counter 5     Calibration Currer (A)     Calibration Currer (A)       Counter 6     Calibration Currer (A)     Calibration Currer (A)       Counter 6     Calibration Currer (A)     Calibration Currer (A)       Counter 7     Calibration Currer (A)     Calibration Currer (A) </td <td></td> <td>Counter 2</td> <td>Calibration Voltage Auto Bange</td> <td>Yes</td> <td></td>		Counter 2	Calibration Voltage Auto Bange	Yes	
Messurements     Counter 4     Calibration Current Auto Range     Yes       Power Supply     230/ 50/50Hz       Power Supply     100/2000       Power Supply<		Counter 3	Calibration Current (A)	5	
Messurements     Image: Construction     Etherne & USB       Analysis     Image: Construction     Etherne & USB       Image: Construction <t< td=""><td><b>O</b></td><td>Counter 4</td><td>Calibration Current Auto Banne</td><td>Yes</td><td></td></t<>	<b>O</b>	Counter 4	Calibration Current Auto Banne	Yes	
Analysis       Inget & Budgets       Communication       Ethernet & USB         Inget & Budgets       Inget & Budgets       Bits	Measurements	E-100 Tariff Clock	Power Supply	230V 50/60Hz	
Analysis     Image pack     Image pack       Image pack     Image			Communication	Ethernet & USB	
Analysis       I) Til Relay output       Diaptay type       LCD 128/64 / Velow Green         II Relay output       II Relay output       Diaptay type       LCD 128/64 / Velow Green         II Relay output       II Relay output       Inquit / Output 1       Relay output 200 / Inquit 1	1000	🖨 🦏 Inputs & Outputs	Memory size	8 MB	
Analysis     Image pack     Standard language pack       Upgrades     Image pack     Standard language pack       Image pack     Image pack     Image pack       Image pack     Image pack<	-174	ᡍ [1] Relay output	Display type	LCD 128x64 Yellow-Green	
Image: Second	Analysis	[2] Relay output	Language pack	Standard language pack	
Upgrades Upg		(4) Datendog output	Input / Output 1	Belau output 230V	-
Image: Construction of the c		[4] neay output	Input / Output 2	·	
Upgrades [C] Synchronization, CDM2 [Toput 7 Output 4 Analogue ripud Alam Group 1 Foput 7 Output A Analogue ripud Alam Group 2 Output A Analogue ripud Alam Group 2 Output B Optial Impo 230V Alam Group 3 Cabacity Output C Synchronization DPS/HIG-9/LUM2 Alam Group 4 Last Configuration date L		B18 x Belay output	Input / Output 3	Pulse output	
Alam Sinop 1     Alam Group 2     Alam Group 2     Alam Group 3     Alam Group 4     A	Upgrades	ICI Synchronisation, COM2	Input / Output 4	Relay output 230V	
Alam Group 1     Indust / Outputs B     Deal of a more of the second of the secon		Alarms	Inputs / Butnuts A	Analogue output 20mA	
Alam Group 2     Alam Group 3     Alam Group 4     A		Alarm Group 1	Inputs / Outputs R	Digital input 230V	
Alam Group 3     Alam Group 4		- 🔔 Alarm Group 2	Inputs / Outputs D	Watchdog output 230V Sunchronication SPS/JBIG-B_TTIM2	
Alem Group 4  Construction date		- 🙏 Alarm Group 3	Calibration date	Synchronisation of Synthe B, Come	
Consequence of the second		Alarm Group 4	Last Configuration date		
Hecoder A     A     Input / Dutput 1		E-S Memory			-
		Hecorder A	( Input / Butput 1		
Records C		Recorder C	Read anti-information about device input	/ autor d antiona included	
Records D     Records D     Records D		Becorder D	nead only momation about device inpu	7 ouipar options included.	

#### 5.2 QDSP2 Interface

Product configurations and settings are displayed in the **QDSP2** setting window.

😂 Refresh	Address: 33	🚖 Go to: 👻		
	😋 Settings		C:\Program Files\QDSP 2.1\Param\M	355.msf
	🖃 🚍 M355	▲ Setting	Value	-
Devices	⊟- 🐨 General	Туре	M355 PQ Analyser	
	Connection	Serial Number		
		Software version		
	Securitu	Hardware version		
Settings		Accuracy class	0.1	
Jocuings.	Counter 1	Calibration Voltage (V)	500	
	Counter 2	Calibration Voltage Auto Range	Yes	
		Calibration Current (A)	5	
	Counter 4	Calibration Current Auto Range	Yes	
measurements	⊡- 📷 Tariff Clock	Power Supply	230V, 50/60Hz	
	Holidays	Communication	Ethernet & USB	
17776	E- ∰ Inputs & Uutputs	Memory size	8 MB	
124	[1] heray output	Display type	LCD 128x64 Yellow-Green	
Analysis	I [3] Watchdog output	Language pack	Standard language pack	
	[4] Relay output	Input / Output 1	Relay output 230V	-
	[A] 8 x Relay output	Input / Output 2	Relay output 230V	
5	- 🝺 (B) 8 x Relay output	Input / Output 3	Watchdog output 48V	
Upgrades	🔚 [C] Synchronisation, COM2	Input / Output 4	Relay output 48V	
	🖻 🌍 Alarms	Inputs / Outputs A	8 x Relay output	
	Alarm Group 1	Inputs / Outputs B	8 x Relay output	
	Alarm Group 2	Inputs / Outputs C	Synchronisation GPS/IRIG-B, COM2	
	Alarm Group 3	Calibration date		
	Aram Gloup 4	Last Configuration date		
	Recorder A		i	
	Recorder B	🚯 Input / Output 1		
	Recorder C	Read only information about device inpu	ut / output options included.	
	Becorder D			

The left part displays a hierarchical tree structure of setting sections available for the product and can vary in length from three sections to a list that more than fills the window. For the same product type the length of the tree can vary due to the hardware build options selected.

The right hand part displays parameter values of the chosen setting group.

Parameter values which are shown in grey text cannot be modified; those in black text can be modified.

Parameter values are changed in one of three ways, which are indicated when the parameter setting description or value are clicked. The setting name will be high-light and if

the value can be changed, either the value will be highlighted or a symbol will be displayed at the right of the value display.

If the value is highlighted the new value can be directly typed in for the parameter. The allowable range of values is shown in the 'help' text at the bottom of the window, as shown below.

Starting current for all Powers (mA)       2         Starting voltage for SYNC (V)       Image: Starting voltage for SYNC (V)         Harmonics calculation       Percent of RMS         Reactive Power & Energy calculation       Standard: Q^2=S^2:P^2         If all voltages are less than 'Starting voltage for SYNC', the current inputs are used for sync. If all currents are less than 'Starting current for PF and PA', the synchronization is stopped and the frequency result is 0.	starting current for FF and FA (mA)	20
Starting voltage for SYNC (V)       Image: Constraint of the synchronization of the synchronizati	Starting current for all Powers (mA)	2
Harmonics calculation         Percent of RMS           Reactive Power & Energy calculation         Standard: Q^2=S^2-P^2           Starting voltage for SYNC (V)         Min: 1         Max: 16         Password: 2           If all voltages are less than 'Starting voltage for SYNC', the current inputs are used for sync. If all currents are less than 'Starting current for PF and PA', the synchronization is stopped and the frequency result is 0.         If all currents are less than 'Starting voltage for SYNC', the synchronization is stopped and the frequency result is 0.	Starting voltage for SYNC (V)	5
Reactive Power & Energy calculation       Standard: Q^2=S^2-P^2         If all voltages are less than 'Starting voltage for SYNC', the current inputs are used for sync. If all currents are less than 'Starting current for PF and PA', the synchronization is stopped and the frequency result is 0.	Harmonics calculation	Percent of RMS
Starting voltage for SYNC (V)     Min: 1 Max: 16 Password: 2     If all voltages are less than 'Starting voltage for SYNC', the current inputs are used for sync. If all currents are less than 'Starting     current for PF and PA', the synchronization is stopped and the frequency result is 0.	Reactive Power & Energy calculation	Standard: Q^2=S^2-P^2

If a grey square with 3 dots appears at the right hand side of the value. Click on the grey square and the settings window will open for the parameter

Auto Summer/Winter time Maximum demand calculation	Yes Themal function 15 min
Min/Maxreset mode	Name and a second se
Starting current for PF and PA (mA)	Maximum demand calculation
Starting current for all Powers (mA)	3
Starting voltage for SYNC (V)	5 Time constant / Window period. 15 V min
Hamonics calculation	F C Disabled
Reactive Power & Energy calculation	S C Themal function
	C Fund in fam
	Stang windows No. windows:  2
	OK Cancel

If a 'down arrow' appears at the right hand side of the value, click on the arrow and the options available will be displayed, as below. Click on the required option to select.

Maximum demand calculation	Thermal function, 15 min
Min/Max reset mode	Manual reset
Starting current for PF and PA (mA)	Manual reset
Starting current for all Powers (mA)	Week reset
Starting voltage for SYNC (V)	Month reset
Harmonics calculation	Percent of RMS
Reactive Power & Energy calculation	Standard: Q^2=S^2-P^2
Win/Max reset mode Minimum and Maximum measurements reset mode.	Password: 2

It is also possible to have a combination of a drop down menu and a highlighted value. In this instance one of the displayed options can be selected or an alternative value can be directly typed in. The allowable range of values is shown in the 'help' text at the bottom of the window, as shown below.

#### User Manual

#### QDSP2

#### Page 22

Setting	Value
Connection mode	4u - 3 phase 4 wire unbalanced
Primary voltage (V)	30000
Secondary voltage (V)	150
Primary current (A)	25000
Secondary current (A)	5
Used voltage range (V)	75 150
Used current range (A)	300
Frequency nominal value (Hz)	1000
Wrong connection warning	1500
Energy flow direction	Normal
CT Connection	Normal
Primary current (A)	Min: 0.1 Max: 1638300 Password: 2
<ul> <li>Primary current of the current transformer.</li> </ul>	
	.::

Any value that has been modified will be shown in blue text, this will be cleared after the settings are downloaded to a product or the settings are stored to a file.

#### 5.3 Product details

By clicking on the product name at the top of the hierarchical tree all of the details for the product will be displayed. If the data is for an actual product the manufacturing configuration is displayed allowing the product details and hardware option list to be read.

#### 5.4 General Settings

General Settings are essential for the operation of the measuring transducer. The settings are divided between the General section and four additional sublevels, Connection, Communication, Display and Security.

For different products some of the sub-levels will be omitted, i.e. for transducers, Display will be omitted as no display is fitted as standard.

#### 5.4.1 Connection

The settings for the connection mode, CT, VT etc are defined. The setting of the connection parameters must reflect the actual application or the measurements will not be valid.

#### 5.4.2 Communication

The settings displayed depend on the hardware options on the specific instrument connected or the settings in the specific settings file that is being worked on off-line.

For some of the products with simple communications capability the communication settings are displayed in the General section.

#### 5.4.3 Display

The settings allow the display visibility and parameter display sequence to be defined.

#### 5.4.4 Security

The settings for the password system can be accessed.

#### 5.5 Energy

The parameters defining the energy measurement and totalising can be modified. After modifications have been done the energy meters must be reset or all subsequent energy measurements will be incorrect.

#### 5.6 Inputs and Outputs

The number of I/O modules shown depends on the product and how many of the optional modules have been selected. The settings displayed will depend on the type of I/O module built in to the instrument or defined in the settings file if working off-line.

## 5.7 Alarms

The Alarms section will only be displayed if the product has alarm capability. Specific products can have software alarm capability without having hardware output alarms fitted.

#### 5.8 Memory

Measurements, alarms, reports and details of supply voltage quality can be stored in the internal memory on certain products with data logging or power quality capability. All records stored in the memory are accessible using **QDSP2**.

File Tools V	/iew Help				_	_	_	
📫 🛃 🐸 • 🕻	<b>-</b>	8						
, S Refresh	Address: 33 🧮 M355	🚖 Go to: 👻	Device #33, CO	0M6 - USB, Se	tting: 11520	0,None,8,2		-
	Cij Settings					M355	, Serial number: M	014924, Read at 14:11:15
	🖃 📃 M355	▲ Setting			Value			
Devices	E- Converting	Reserved for network quality			2,048 K.B			
	Econnection	Memory division			A=59%, B	3=25%, C=7%, I	0=5%, Alarms=4%	
(18)	Display	Recorder A state			Active			
(3)		Recorder B state			Active			
Settings	🖨 🚺 Energy	Recorder C state			Active			
		Hecorder D state			Active			
0	Counter 2	Alarms state			Active			
<b>C</b>	Counter 3	Quality reports state			Active			
Measurements	E Tariff Clock	Guality details state			Active			
	Holidays		Memory divis	ion			×	
1000a	E 🧊 Inputs & Outputs		Available mer	noty:	6,142 KB			
4224	- # [1] Watchdog output			1 32 1		1. 4. 4. 4.	1.2	
Analysis			Part	%	Blocks	Records	Capacity	
	[4] Analogue input		Hec A	59 🛨	3,623	101,444	/U4d	
	ᡍ [A] 8 x Relay output		Hec B	25	1,532	49,024	340, In	
<b>1</b>	ᡍ [B] 8 x Digital input		Rec D	5	400	12,040	030, 1411	
Upgrades			Alarma	4	250	32,000		
	Alarms		Jeanno		200	02,000	L	
	Alarm Group 2				Rea	٨	Default	
	👗 Alarm Group 3				Rec	B		
	Alarm Group 4				Rec Rec	C I	ПК	
	E- S Memory	(1) Memory division			Alan	ms		Password 2
	Becorder A	The size of the memory					Cancel	
	Recorder C							
	Recorder D							

The individual data recorders can be made active or stopped and the amount of memory assigned to each recorder can be defined.

The data that is to be stored on each channel of each logger can be defined.

🔁 Refresh	Address: 33 📑 M355	🛛 🙀 Go to: 🔹 Device #33, COM6 -	USB, Setting: 115200,None,8,2	
	Gi Settings		M355, Serial number: MC014924, Read	at 14:11:15
	😑 🛄 M355	▲ Setting	Value	-
Devices	🖻 🕋 General	Storage interval (min)	1	
		MD Time constant 1-8 and 17-24 (min)	15	
	E	MD Time constant 9-16 and 25-32 (min)	15	
100	- Display	Push data to link	No pushing	
Setting	E T Energy	Pushing period	Each record	
Jocungs	Counter 1	Pushing time delay	No delay	
	Counter 2	1. Recorded parameter	Voltage U1, Average	
	Counter 3	2. Recorded parameter	Voltage U2, Average	
	Counter 4	3. Recorded parameter	Voltage U3, Average	
measurements	E Tariff Clock	4. Recorded parameter	Current I1, Average	
	Holidays	5. Recorded parameter	Current I2, Average	
10.34	Inputs & Uutputs	6. Recorded parameter	Current13 Average	
424	[1] Watchdug output	7. Recorded parameter	, 5. Recorded parameter	<u> </u>
Analysis	- I Analogue input	8. Recorded parameter	,	
	- 🧊 [4] Analogue input	9. Recorded parameter	, Parameter: Current 12	-
	- 🪂 [A] 8 x Relay output	10. Recorded parameter	I Value: Average	<b>–</b>
5	ᡍ (B) 8 x Digital input	11. Recorded parameter	1	
Upgrades	- 💓 [C] Synchronisation, COM2	12. Recorded parameter	I Memory recording	
	E- Alarms	13. Recorded parameter	1	
	Alam Group 1	14. Recorded parameter	I OK Cano	el
	Alarm Group 2	15. Recorded parameter		
	Alam Group 4	16. Recorded parameter	5)	
	Memory     Recorder A     Recorder B     Recorder C     Recorder C     Power supply quality	S. Recorded parameter     Measured parameter and value for recording	rito memory.	assword: 2

### 5.9 Power Supply Quality

The settings for the Power Quality Analyser can be set.

### 5.10 Reset Operations

This allows the reset of certain values, i.e. Counters.

#### 6. **MEASUREMENTS**

When the Measurements ICON is selected the option to display values from a connected product or from a simulation is given. The simulation option shows how the values would be displayed if a product was attached, and is useful for demonstration purposes.

#### 6.1 Online measurement display

The values from the connected product or simulation can be displayed in real time in tabular or graphical form, selection buttons as shown below. The values are divided into a number of sections which are selected using the tabs at the bottom of the screen, shown below

Maximum demands	Dynamic demands	Heset demands	Date MD
Measurements Min/Max Harmonics Up H	armonics Upp Harmonics	I Quality Interharmonics	
🛄 Table view 🛍 Graphic view   🔩 Rec	order		

It is also possible to set a default preference for each of the value sections to be displayed in either tabular or graphical form. By selecting <Tools><Options><Measurements> the following screen is displayed on which the preferences can be defined.

Optic	ons ieneral Upgrades Measurements Default Page View		×
	<ul> <li>General Measurements</li> <li>Minimum and Maximum</li> <li>Harmonics Up</li> <li>Harmonics Upp</li> <li>Harmonics I</li> <li>Quality EN 50160</li> <li>Interharmonics Up</li> <li>Alarms</li> </ul>	Table view Table view Graphic view Graphic view Graphic view Table view Graphic view Table view	
_		OK Cancel	

To view the real time measurements, the communications link to the product must be established. The data will be refreshed approximately every 2 seconds.

Below are samples of the graphical displays.



The measurements can appear on more than one measuring sheet in the tabular form, depending on the number of measurements supported by the specific product.

🔁 Refresh	Address: 33	🚖 G	io to: 👻			
	Measurements					M355 - Simu
	Phase measurements	LI	L2	L3	Total	Others
Devices	Voltage	229.88 V	229.27 V	228.25 V		U~ = 229.14 V
	Current	166.99 A	270.35 A	254.37 A	691.72 A	I~ = 230.57 A
(10)	Real Power	38.26 kW	61.80 kW	55.81 kW	155.88 kW	
(A)	Reactive Power	1.95 kvar	4.31 kvar	15.91 kvar	22.18 kvar	
Settinas	Apparent Power	38.38 kVA	61.98 kVA	58.06 kVA	158.44 kVA	
-	Power Factor	0.9969 Ind	0.9970 Ind	0.9614 Ind	0.9839 Ind	
	Power Angle	1.80 *	2.06 *	15.65 °	8.09 *	
	THD-Up	2.25 %	2.32 %	2.22 %		
Measurements	THD-I	7.11 %	5.95 %	4.93 %		
neasaremenes	Phase to phase measurements	L1 · L2	L2 · L3	L3 · L1	Total	Others
	Phase to phase voltage	398.49 V	395.85 V	396.31 V		Upp~ = 396.88 V
1100	Angle	120.41 °	119.81 *	119.76 °		
424	THD-Upp	2.31 %	2.20 %	2.21 %		
Analysis	Neutral line	Measured	Angle	Calculated	Error	
	Current	2.81 A	-81.59 *	2.85 A	120.05 mA	
	Voltage	0.48 V	101.81 *			
50	Energy counters	Counter E1 (Exp)	Counter E2 (Exp)	Counter E3 (Imp)	Counter E4 (Imp)	Active tariff
Upgrades	Total	23,347.16 kWh	1,441.18 kvarh	995.33 kWh	28,481.27 kvarh	1
	Tariff 1	23,347.16 kWh	1,441.18 kvarh	995.33 kWh	28,481.27 kvarh	
	Tariff 2	0.00 kWh	0.00 kvarh	0.00 kWh	0.00 kvarh	
	Tariff 3	0.00 kWh	0.00 kvarh	0.00 kWh	0.00 kvarh	
	Tariff 4	0.00 kWh	0.00 kvarh	0.00 kWh	0.00 kvarh	
	Energy cost	Counter E1, Cost	Counter E2, Cost	Counter E3, Cost	Counter E4, Cost	
	Energy cost in EUR	2,230.13	142.13	99.47	2,735.61	
	Maximum demands	Dynamic demands	Reset demands	Date MD	Time MD	Time into period
	MD Current I1	168.06 A	687.62 A	11/04/2013	15:27:41	10 min

To stop the measurements and hold the data, right click on the data display table and select 'Hold Measurements'. When the Measurement data is 'Held' it can be copied for inclusion in a document.

To restart the real time measurements press 'Refresh'.

#### 6.2 Online measurements recorder

In addition to defining the online measurement displays as tabular or graphical, it is possible to record all or part of the online data received into a '.csv' file on the PC. The '.csv' file can be loaded into Excel or an equivalent program and converted to a standard spreadsheet for analysis.

When the online measurements are operating press the 'Recorder' button to display the following screen. This defines where the data is to be stored and in what form.

1	Measurements Rec	order	×
	Recorder Filter	1	(
	File name:	Recorder.csv	
	Path:	C:\Program Files\QDSP 2.1\Data	
	File Type:	Excel (*.csv)	
	Data Type:	Values & Units	
	Start Recor	ding	
	Stop Recor	ding	Close
	Status: Stopped		

The 'Filter' tab can be used to define which values are to be included in the recorder file.

Recorder       Filter         Angle       Image         THD-Upp       Energy         Dynamic demands       Image         Flickers Pst       Image	Select all
Start Recording Stop Recording Status: Stopped	Close

When the setup is complete, the recoding can be started by clicking 'Start Recording' and it will continue until it is stopped by clicking on 'Stop Recording'. The data will be stored at the rate of the data refresh on the communications.

Page 28

The data recording can be stopped and restarted as required with the data being stored in the same file.

--, ----, -----, ----- , , ----- , -----78 79 M253;MC011072;U1;U2;U3;U^\*;11;12;13;I;I^\*;P1;P2;P3;P;Inc;Q1;Q2;Q3;Q;S1;S2;S3;S;PF1;PF2;PF3;PF;PA1;PA2;PA3;PA;THD U1;THD U2;THD U3;THD I1;THD I2 

#### 7. DATA ANALYSIS

The Data Analysis section downloads and displays the data from products that have internal memory for logging data and power quality events. When Analysis is selected there are three options of where the data can be obtained for analysis, from a connected device, a previously stored file or a SD/MMC card data file.

#### 7.1 Read Instrument Data

If 'Read instrument data' is selected the following screen is seen that defines which memory sections are available and allows definition of the data that is to be downloaded.



The data will then be downloaded and a summary of the data transferred is displayed.

Me Tools Yew (bdp)   Perfect   Address 33     C:\Program FlesiQOSP 2:1\Data\PQ Analyser MC355_Trest.dd2   Device   Type:   Settings   Messurements   Perice   Analysis   Data transfer   Location:   Location: <t< th=""><th>🐺 QDSP 2.1 - Setting Studio</th><th>io</th><th></th><th></th></t<>	🐺 QDSP 2.1 - Setting Studio	io		
Image: Solution of the secondary of the second	Elle Iools View Help	p		
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The 'tabs' along the bottom allow the required recorder to be selected and the recorder data is displayed in a table.

#### QDSP2

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- (55)	00:15:00	226.45	226.73	226.55	392.23	392.73	392.40	0.00	0.070	0.220	49.949	58.38	51.72	49.08	15
0	00:30:00	228.68	229.03	228.75	396.23	396.68	396.13	0.00	0.060	0.220	49.999	54.06	50.34	47.28	14
Settings	00:45:00	228.43	228.95	228.48	395.88	396.30	395.73	0.00	0.090	0.210	50.007	61.02	50.76	51.06	16
	01:00:00	228.10	228.43	228.03	395.23	395.53	394.95	0.00	0.060	0.220	50.016	55.14	52.44	51.78	15
	01:15:00	228.10	228.50	228.18	395.20	395.70	395.18	0.00	0.080	0.230	49.956	57.60	50.88	50.40	15
	01:30:00	228.80	229.23	228.93	396.45	396.95	396.45	0.00	0.070	0.230	49.995	56.88	49.26	48.18	15.
	01:45:00	229.08	229.35	229.10	396.83	397.25	396.75	0.00	0.060	0.220	50.005	55.14	52.08	50.52	14
Measurements	02:00:00	228.88	229.50	229.10	396.73	397.43	396.65	0.00	0.080	0.230	50.004	60.18	49.68	48.12	16.
	02:15:00	228.95	229.33	229.08	396.68	397.18	396.63	0.00	0.060	0.220	49.991	56.46	53.04	49.98	14
	02:30:00	229.38	229.78	229.50	397.40	398.05	397.40	0.00	0.080	0.220	50.005	57.96	52.38	52.50	16.
1000	02:45:00	228.73	229.45	228.80	396.38	397.25	396.33	0.00	0.160	0.220	50.000	73.08	52.80	63.36	23.
Analysis	03:00:00	228.65	229.18	228.68	396.05	396.88	396.13	0.00	0.140	0.220	50.011	67.38	52.44	62.22	22
	03:15:00	228.25	229.00	228.30	395.63	396.35	395.48	0.00	0.150	0.190	49.999	73.26	52.08	60.90	23
	03:30:00	228.95	229.55	228.90	396.73	397.38	396.53	0.00	0.130	0.220	50.015	69.60	54.24	62.58	21.
	03:45:00	228.93	229.53	228.90	396.65	397.35	396.55	0.00	0.150	0.220	50.005	71.22	54.36	62.40	22
50	04:00:00	228.43	229.20	228.45	395.93	396.73	395.70	0.00	0.160	0.240	50.009	75.78	56.40	67.20	22
Upgrades	04:15:00	228.15	228.98	228.20	395.45	396.33	395.23	0.00	0.160	0.220	50.004	90.66	73.86	86.88	22
	04:30:00	228.33	229.28	228.43	395.78	396.75	395.70	0.00	0.200	0.220	50.005	117.90	94.98	107.40	26
	04:45:00	228.15	228.58	228.15	395.23	395.70	395.35	0.00	0.130	0.230	49.998	117.00	104.22	108.00	19.
	05:00:00	227.43	227.75	227.35	393.80	394.28	394.18	0.00	0.150	0.220	49.990	117.36	101.64	108.66	21.
	05:15:00	226.58	227.45	226.68	392.88	393.55	392.58	0.00	0.150	0.230	50.018	116.04	100.56	105.60	22
	05:30:00	227.25	227.90	227.23	393.95	394.43	393.55	0.00	0.120	0.220	50.000	103.68	94.86	98.82	20.
	05:45:00	226.40	227.20	226.63	392.55	393.23	392.40	0.00	0.120	0.220	49.993	112.86	97.38	98.46	20
	06:00:00	225.18	226.03	225.28	390.40	391.23	390.10	0.00	0.160	0.210	49.992	140.16	126.84	133.44	22
	06:15:00	224.13	225.85	224.33	389.10	390.05	388.78	0.00	0.350	0.230	50.012	220.56	187.26	189.90	36.
	06:30:00	223.15	225.05	223.75	387.65	388.78	387.45	0.00	0.340	0.210	49.992	218.70	182.28	180.06	39
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#### The start date for the data displayed can be selected.



#### There is a 'Graphical Analysis' function that displays the required data graphically.

#### QDSP2



The data that is displayed on each chart can be modified for type of measurement parameters and timescale. The number of charts per page can also be modified.

There is also an Export function which can export all or a part of the data to a **QDSP2** data file or to an excel file (.xlsx).

Data	Export ile Export to: E; File name: P( Path: C:	xcel file (*.xlsx) Q Analyser MC355_Te :\Program Files\QDSF Open exported file	■ st.xlsx 2.1\Data	× 	
	Pata         Image: Recorder A         Image: Recorder B         Image: Recorder C         Image: Recorder D         Image: Recorder D	\$	All Data     Filter     From date:     22/10/2012     To date:     08/02/2013	<b>Y</b>	
			Export Cl	ose	

The EN50160 Quality report periods are displayed in tabular form, when individual Power quality report periods are high lighted the quality data for the report period is displayed. This report summary can be printed out.

#### QDSP2

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	Analysis						C:\	Program Files\QDSF	P 2.1\Data\M355 Dem
	Benort Start	Fr	nd	Compliance	Status	Deviations e	valuation E	lemark	
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1	Monitoring parameter	eters EN 501 Compliance	60 L1 (System)	L2	L3	Multi Phase	Required Quality	Limit	Create PQ Report Deviations
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For each report period the deviations can also be detailed and can be displayed for a specific parameter by clicking on 'Show deviations'.

By clicking 'Create PQ Report' a full EN50160 report can be generated, including full details for all parameters, as a pdf file.



The Power Quality data can also be exported as an '.xlsx' file for reading in Excel.

#### 7.2 Open data File

When 'Open data File' is selected any previously stored, downloaded data file can be accessed. In addition a demonstration data file is provided allowing the analysis software to be tried without having a product connected or previously downloaded data available.



#### 7.3 Import SD/MMC data

If a data file has been copied from a SD or MMC card this can be accessed as the source of the data for analysis. See section 14 for details of the memory card operation.

Page 34

## 8. UPGRADES

It is possible to check for the availability of a newer version of the **QDSP2** software if the PC is connected to the Internet. Click 'Upgrades' and the latest version of the **QDSP2** software will be shown. It is suggested that 'Refresh list' is used to ensure that the screen displayed in not a cached copy.

😂 Refresh	Address: 1		🚖 Golto: 👻		
	🌄 Upgrades				
39		Upgrade version	Download link	History file	×
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40	📅 QDSP	2.1.0.01 (14/10/2013)	📦 QDSP 2.1.0.01.exe	圆 QDSP 2.1 History.txt	Refresh list
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	💻 M233	1.19 (05/05/2013)	👰 M233_1.19.zip	💽 M2X3 History.txt	
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	5MQ	1.19 (05/05/2013)	📦 I5MQ_1.19.zip	[]] I5≫ History.txt	
	5MB	1.19 (05/05/2013)	👰 I5MR_1.19.zip	ISXX History.txt	
20	5MT	1.19 (05/05/2013)	🎑 I5MT_1.19.zip	🖲 ISXX History.txt	
Upgrades	💻 15RD				
	\Xi 15MS				
	\Xi 15ML				
	I5MV				
	SMC				
	== 14MT	1.18 (23/04/2012)	📦 I4MT_1.18.zip	🐘 I4MT History.txt	
	14MV	1.18 (23/04/2012)	🍒 I4MV_1.18.zip	🖲 I4M_CV History.txt	
	14MC	1.18 (23/04/2012)	🍒 I4MC_1.18.zip	属 I4M_CV History.txt	-
	I4DG	,	· · ·		
	I I4DF				
					-

**QDSP2** can also be configured to automatically check for **QDSP2** updates by clicking <Tools><Options><Upgrades> and selecting the required option as shown below.

Opti	ons	×
	General Upgrades Measurements	
	Upgrades location	
	IP Address: http://qdsp.emeasurements.com/	
	Automatic upgrade checking	
	Every time at startup     Every 1      weeks	
	<ul> <li>No automatic checking</li> </ul>	
	Notification when device upgrade available	
	OK Cancel	

If the latest version is not being used an upgrade can be downloaded. Also the change history file for **QDSP2** can be downloaded.

#### 8.1 Device Upgrade

The 'Upgrades' screen above also defines the latest firmware version issued for each of the products. The modification history file can also be downloaded for each product family to identify what modifications have been done.

If necessary a new version of product firmware can be downloaded and this includes full details of how to upgrade the iSTAT product. Upgrading an iSTAT product should only be done if a 'bug fix' or new feature is required, as any interruption during the upgrade process can damage the product such that it may not be economical to repair.

#### 9. OTHER FEATURES

#### 9.1 Change QDSP2 language

The **QDSP2** screens can be displayed in multiple languages which are selected after the software has been installed. To select the required language click <Tools><Options><General> and select the language from the defined list, as below.

Options		×
General Upgrades Measuremen	nts	_
- International		
Language:	English	
Saving data	English German	
Default file name:	Defined by QDSP	
File Directory		
Settings: C:\\QDSP ( Data: C:\\QDSP (	2.1\Param 2.1\Data Change	
Fixed window size and po	sition	
	OK Cancel	

After selecting the language the **QDSP2** software has to be restarted to operate in the selected language.

#### 9.2 Memory card operation

The M2x3 and M3x5 ranges of products are fitted with a memory card interface for data transfer without needing to have a PC on site. The card can be used to transfer device settings and the contents of the data logger and power quality memory storage if fitted. To use the memory card the PC being used will have to be fitted with a memory card reader.

For details on importing and exporting data to the memory card please see the **QDSP2** help files. For details of using the memory card with the product see the applicable technical manual.

#### 9.3 Interactive Instrument

The Interactive instrument operates with all instruments that are fitted with an integral display, allowing a representation of the instrument front panel to be controlled from the **QDSP2** software.

When communications have been established with the instrument the Interactive instrument is started by clicking on the icon. The icon will not be active for instruments without an integral display or when **QDSP2** is in the Measurements mode.

The display currently on the instrument is displayed and by clicking on the arrow keys and OK the operation of the instrument can be controlled from **QDSP2**. This allows the display of measurements and settings, and the changing of any settings in the same way as if the instrument front panel was being used. Also if the display is controlled from the product's front panel any changes will be shown on the Interactive instrument on **QDSP2**.

#### **User Manual**

#### QDSP2



Page 38

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